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Heterodera zeae, a cyst nematode of corn

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BACKGROUND:

A cyst nematode new to the western hemisphere has been recovered from 4 corn fields in Kent County, Maryland. The corn cyst nematode (*Heterodera zeae* Koshy, Swarup and Sethi, 1970) was collected by Drs. L. R. Krusberg and L. M. Goff in February 1981 (3,6). Workers in India consider the corn cyst nematode to be one of the 4 economically important cyst nematodes in that country along with the golden nematode (*Heterodera rostochiensis*), the oat cyst nematode (*Heterodera avenae*), and the pigeon pea nematode (*Heterodera cajani*) (2). The corn cyst nematode may infect corn alone or in combination with the oat cyst nematode and occurs in 5 of the states in India. This nematode has also been found in Egypt and Pakistan.

It has been observed causing pale, stunted plants with narrow leaves (2,6). In Maryland, corn yields are reported to decline even with good cultural and fertilizer practices. It does not, at this time, appear to be limited by any particular soil texture (4,6).

HOSTS:

The currently available literature indicates that the following plants are hosts for the corn cyst nematode (1,3,4,5,6,8).

Avena sativa L.	(oats)
Digitaria longiflora (Retz.) Pers.	(India crab grass)
Echinochloa colonum (L.) Link	(jungle rice)
Hordeum vulgare L.	(barley)
Panicum javanicum Poir. (as *Urochloa panicoides* Beauv.)	(liverseed grass)
Panicum sp.	(panic grass)
Setaria italica (L.) Beauv.	(foxtail millet)
Sorghum bicolor (L.) Moench. (as *Sorghum vulgare* Pers.)	(milo)
Sorghum sudanense (Piper) Stapf	(Sudan grass)
Triticum aestivum L.	(wheat)
Zea mays L.	(corn)

Within the above list, barley, oats, wheat, panic grass, and jungle rice are considered to be poor hosts (5,6).

Milo and wheat have been reported both as hosts and nonhosts, which suggests that varietal differences may exist (5). Two additional plant species have been reported as nonhosts, *Paspalum* sp., and *Pennisetum americanum* (L.) K. Schum. (as *Pennisetum typhoideum*) or Indian millet (5).

LIFE CYCLE AND BIOLOGY:

The literature has little biological data regarding the corn cyst nematode. In one test, it was reported that second stage larvae were observed entering the roots of corn 48-72 hours after inoculation. Five days later, the second molt occurred, and the genital primordium could be observed. Twenty days after the larvae had entered the roots, adult egg-filled cysts appeared (6,7).

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DISCUSSION:

The corn cyst nematode which has just made its first appearance in the western hemisphere is a known economic pest of corn in India. Presently, it is known elsewhere only from Egypt and Pakistan. Since published information on this nematode is scant, it is difficult to evaluate the potential that it has for becoming a major corn pest in the United States. Because the nematode forms a cyst, one can expect that it will share with other species of Heterodera, to a greater or lesser degree, the ability to survive for extended periods without a host. It can also be readily disseminated by flooding or drainage, or in soil which might cling to farm machinery, vehicle tires, tools, or clothing. Furthermore, this nematode does not appear to be limited to any particular soil texture (4,6).

SURVEY AND DETECTION:

1) Examine top parts of corn for unthriftiness, stunting, pale color and narrow leaves.

2) If corn cyst nematodes are suspected, submit approximately one pint of combined soil and roots to a nematology laboratory and include a written statement to that effect.

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